ACUROS® CQD® 640 USB3 eSWIR Camera

ACUROS-0640-USB3-002

The ACUROS CQD extended SWIR (eSWIR) cameras have sensitivity from 400 nm to 2000 nm. This novel, wide bandwidth capability opens up new applications for chemical sensing, surveillance imaging, plastic sorting, and more. Acuros eSWIR cameras have unmatched SNR without the need for expensive cooling systems.

SPECIFICATIONS

Table 1. ELECTRO-OPTICAL SPECIFICATIONS

Parameter	Value/Description
Sensor	ACUROS CQD sensor
Temperature Stabilization	Single-stage thermo-electric cooler
Sensor Array Format	640 x 512
Resolution	0.33 MP (megapixel)
Spectral Band	400–2000 nm
Array Size	9.6 mm x 7.7 mm, 12.3 mm diagonal
Pixel Pitch	15 μm x 15 μm
Max Frame Rate at Full Resolution	270 fps (8, 10, 12, 14 bit)
Pixel Operability	99.9% typical, 99.75% min
Bit Depth	8, 10, 12 bit selectable
Integration Type	Snapshot global shutter
Trigger	External TTL
Integration Time	100 μs to 4 s
Dynamic Range	65 dB typical
Windowing & Windowing Frame Rate	Array centered. Scales inversely to window size
Binning Arrays	2 x 2, 4 x 4
Non-uniformity Correction	2-point non-uniformity correction
Temporal Dark Noise	80/70/65 e^- typical
Detectivity	See typical detectivity curve (Figure 4)

ORDERING INFORMATION

Part Number
ACUROS-0640-USB3-002

Features

- VGA Resolution
- TEC Cooling
- Low Noise
- Fast Frame Rate
- Visible-eSWIR
- USB3 Vision

Applications

- Hydrocarbon Detection
- Chemical Sensing
- Medical Imaging
- Plastic Sorting
- Hyperspectral
- High Resolution
- Thermal Imaging
- Surveillance
- Machine Vision
- Silicon Inspection
- Instrumentation

Table 2. ENVIRONMENTAL & POWER SPECIFICATIONS, TYPICAL PERFORMANCE

Parameter	Value/Description
Operating Case Temperature	−20 °C to +55 °C
Power Consumption	6.5−12 W depending on TEC settings
Power Supply Voltage	6−16 V dc
Regulatory Compliance	CE mark

Table 3. MECHANICAL SPECIFICATIONS

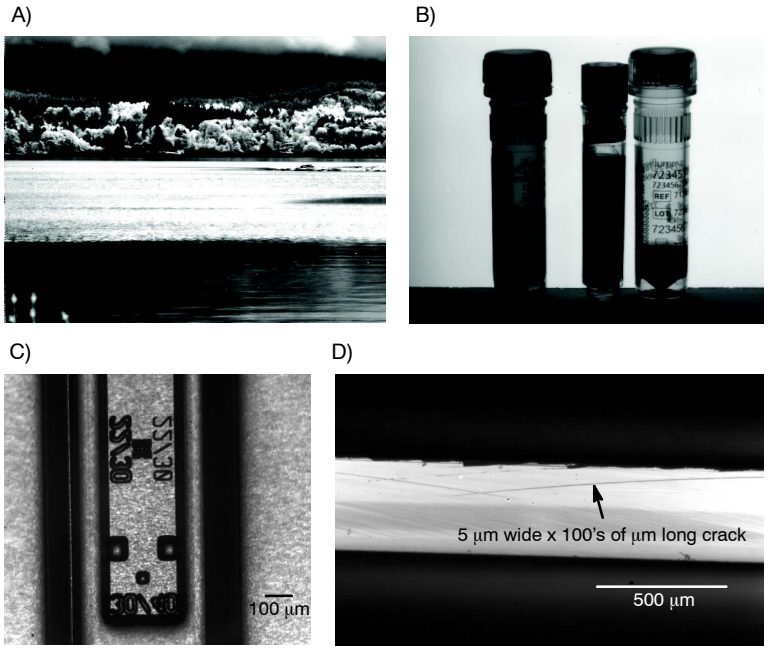
Parameter	Value/Description
Dimensions Excluding Lens	6.1 x 6.1 x 9.7 cm (C-mount)
Weight Excluding Lens	590 grams with C-mount adapter
Lens Mounts	C, M42 (C-mount flange-back distance)
Power Connector	Hirose 12-pin, HR10A-10R-12PB (71)
Trigger Connector	BNC

Table 4. SOFTWARE AND USER INTERFACE

Parameter	Value/Description
Software Development Kit	Windows GUI
GenICam Compliance	Yes
Interface	USB3 Vision

Figure 1. C-mount and M-42 Lens Mounts

Figure 2. USB3 Vision Interface



A) ACUROS 640: imaging through maritime rain event
B) ACUROS 640: imaging through pharmaceutical vial labels
C) ACUROS 1280: alignment mark in bonded wafers
D) ACUROS 1920: mag image of semiconductor chip edge

Figure 3. ACUROS CQD SWIR Camera Images

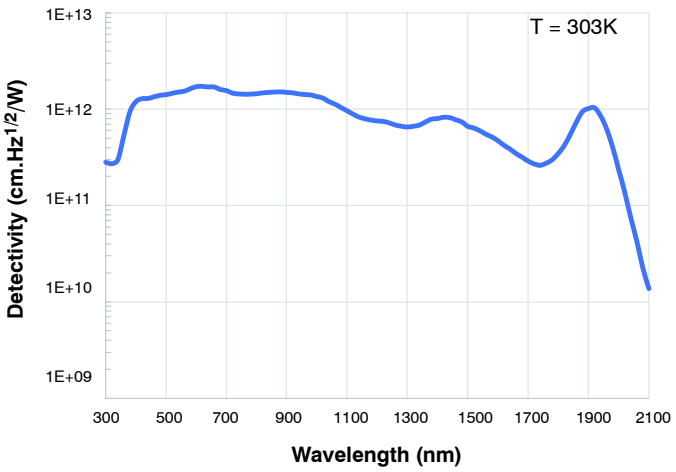


Figure 4. Typical Detectivity Performance

REVISION HISTORY

Revision	Description of Changes	Date
2	Removed “eBUS SDK” from Software Development Kit due to change in licensing.	3/13/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

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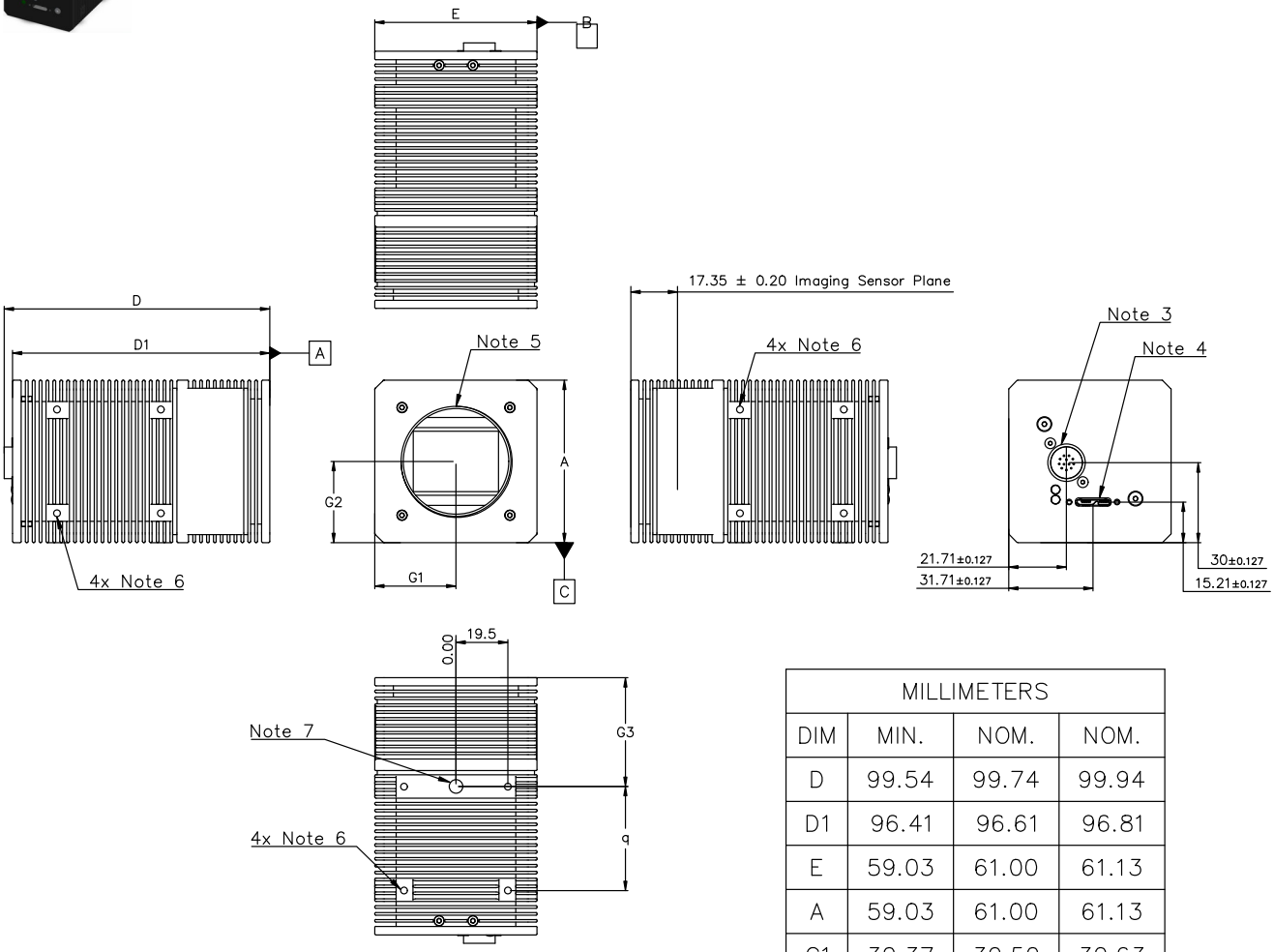

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M. 2018.
2. CONTROLLING DIMENSION: MILLIMETER
3. HIROSE 12 PIN CONNECTOR
4. USB 3.0 Micro−B
5. M42−MOUNT ↧ 9.8
6. M3X0.5 DEPTH ↧ 3.0
7. 1/4−20 UNC DEPTH ↧ 5.08

MILLIMETERS			
DIM	MIN.	NOM.	NOM.
D	99.54	99.74	99.94
D1	96.41	96.61	96.81
E	59.03	61.00	61.13
A	59.03	61.00	61.13
G1	30.37	30.50	30.63
G2	30.37	30.50	30.63
G3	40.63	40.83	41.03
q	38.98	39.11	39.24
q1	19.37	19.50	19.63

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